June 2013

Off-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

October 2013

EXECUTIVE SUMMARY

- A total of 9 off-post samples were scheduled to be collected during the June 2013 monitoring event. One well, OFR-3, could not be sampled due to change in property ownership and no response from the new owner for access.
- Analyses indicated off-post well RFR-10 exceeded the MCL for tetrachloroethene (PCE) and trichloroethene (TCE). *Cis*-1,2-dichloroethene (cis-1,2-DCE) was also detected below the laboratory reporting limit (RL). This well is equipped with granular activated carbon (GAC) filtration system.
- GAC-filtered samples were collected as part of the AOC-65 In-Situ Chemical Oxidation (ISCO) Treatability Study in June 2013 and all analyses were non-detect indicating the GAC filtration systems are functioning properly. The next GAC-filtered samples will be collected during the September 2013 event.
- Semi-annual GAC maintenance was performed July 29, 2013. This involved replacing the first carbon canister in each GAC unit and other routine maintenance. This carbon exchange is performed semi-annually; the next carbon change-out will be due in January 2014.

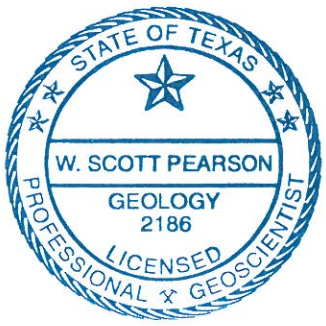
GEOSCIENTIST CERTIFICATION

June 2013 Off-Post Quarterly Groundwater Monitoring Report

For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

I, W. Scott Pearson, P.G., hereby certify that the 2013 June Off-Post Quarterly Groundwater Monitoring Report for the Camp Stanley Storage Activity installation in Boerne, Texas accurately represents the site conditions of the subject area. This certification is limited only to geoscientific products contained in the subject report and is made on the basis of written and oral information provided by the Camp Stanley Storage Activity Environmental Office, laboratory data provided by APPL, and field data obtained during groundwater monitoring conducted at the site in June 2013, and is true and accurate to the best of my knowledge and belief.



W. Scott Pearson, P.G.
State of Texas
Geology License No. 2186

10-25-2013
Date

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ABBREVIATIONS AND ACRONYMS

AOC	Area of Concern
APPL	Agriculture & Priority Pollutant Laboratory
CSSA	Camp Stanley Storage Activity
DCE	Dichloroethene
DQO	Data Quality Objective
FD	Field Duplicate
FO	Fair Oaks
GAC	Granular Activated Carbon
HS	Hidden Springs
I10	Interstate Highway 10
ISCO	In-Situ Chemical Oxidation
JW	Jackson Woods
LS	Leon Springs
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
OFR	Old Fredericksburg Road
OW	The Oaks Water Supply Corporation
Parsons	Parsons Government Services, Inc.
PCE	Tetrachloroethene
P.G.	Professional Geologist
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RFR	Ralph Fair Road
RL	Reporting Limit
SAP	Sampling and Analysis Plan
SDWA	Safe Drinking Water Act
SWMU	Solid Waste Management Unit
SLD	Scenic Loop Drive
TCE	Trichloroethene
THM	Trihalomethanes
VOC	Volatile Organic Compound

JUNE 2013
OFF-POST GROUNDWATER MONITORING REPORT
CAMP STANLEY STORAGE ACTIVITY

1.0 INTRODUCTION

This report presents results from the off-post quarterly sampling performed for Camp Stanley Storage Activity (CSSA) in June 2013 as required by the Administrative Order on Consent dated May 5, 1999. The purpose of this report is to present a summary of the sampling results. Results from all four 2013 quarterly monitoring events (March, June, September, and December) will be described in detail in an Annual Report to be submitted after December 2013. The Annual Report will also provide an interpretation of all analytical results and an evaluation of any temporal or spatial trends observed in the groundwater contaminant plume during investigations.

Groundwater monitoring was performed June 19-26, 2013. The quarterly off-post groundwater monitoring program was initiated in September 2001 in accordance with the **Off-Post Monitoring Program and Response Plan** (**CSSA, 2002,** herein referred to as the "Plan"). Action levels for detection of volatile organic compounds (VOCs) and the rationale for sampling off-post wells are described in the Plan.

The CSSA groundwater monitoring program also follows the provisions of the groundwater monitoring program data quality objectives (DQOs) as well as the recommendations of all applicable project-specific work plans. **Appendix A** provides an evaluation of the Data Quality Objective Attainment for this sampling event.

The primary objective of the off-post groundwater monitoring program is to determine whether concentrations of chlorinated VOCs detected in off-post public and private drinking water wells exceed safe drinking water standards. Other objectives are to determine the lateral and vertical extent of the contaminant plumes and identify trends (decreasing or increasing) in contaminant levels over time in the sampled wells.

2.0 JUNE 2013 ANALYTICAL RESULTS

During the June 2013 event, groundwater samples were collected from 8 off-post wells shown in **Figure 2.1.** A sample from well OFR-3 was also scheduled to be collected during this event, but a change in ownership has resulted in a temporary loss of site access until the new owner can be contacted. GAC (granular activated carbon) filtered samples (LS-5-A2, LS-6-A2, LS-7-A2, OFR-3-A2, RFR-10-A2, RFR-10-B2, and RFR-11-A2) are typically collected on a semi-annual basis for the routine groundwater monitoring program, and were not scheduled to be collected during this quarterly event. However, in support of the ongoing ISCO treatability study at AOC-65, samples were collected from these locations during the June event to ensure that the remedial strategy is not having undesirable affects on nearby private wells. **Table 2.1** includes the rationale for selection of the wells sampled in June 2013, and **Figure 2.1** provides well locations for the following sampled wells:

- One privately-owned well (I10-4 [unused]) in the Interstate-10 area;
- Three wells in the Leon Springs Villa area (one public well: LS-6; two privately-owned wells: LS-5 and LS-7);
- Two privately-owned wells (RFR-10 and RFR-11) in the Ralph Fair Road area;
- Two public supply wells from The Oaks Water Supply System (OW-BARNOWL and OW-HH2);

All active wells with submersible pumps were sampled from a tap located as close to the wellhead as possible. Most taps were previously installed by CSSA to obtain a representative groundwater sample before pressurization or storage of groundwater in the water supply distribution system. Water was purged to engage the well pump prior to sample collection. Conductivity, pH, and temperature readings were recorded to confirm adequate purging while the well was pumping. Generally, this required an average of 20 gallons to be purged prior to sample collection. One well (I10-4) was sampled using a disposable bailer. The samples from these wells are not subject to purging/sample parameter requirements.

A total of 8 groundwater samples and two trip blanks were submitted to Agriculture & Priority Pollutant Laboratory (APPL) in Clovis, California for analysis. One field duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) pair from on-post wells are associated with the sample data groups for QA/QC purposes. Groundwater samples were analyzed for the short list of VOCs using SW-846 Method 8260B. The approved short list of VOCs includes *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-DCE, 1,1-DCE, PCE, TCE, and vinyl chloride.

The data packages (Parsons internal reference 748350-#138, -#141, and -#142) contain the analytical results for this sampling event and are presented in **Appendix C**. Laboratory results were reviewed and verified according to the guidelines outlined in the CSSA Quality Assurance Project Plan (QAPP), Version 1.0. Parsons received data packages July 12-25, 2013.

Concentrations of the VOCs detected in June 2013 are presented in **Table 2.2**. Full analytical results from the June 2013 sampling event are presented in **Appendix B**. As shown in **Table 2.1**, 9 samples were scheduled for collection in June 2013; one sample (OFR-3) was not collected due to the inability to contact the new property owner to schedule access.

Table 2.1
Sampling Rationale for June 2013

Well ID	2001		2002				2003				2004				2005				2006				2007				2008				2009				2010				2011				2012				2013		Sampling Frequency
	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June		
BSR-03																																							access agreement received				NS	NS		NS	NS	9-month (snapshot)
BSR-04																																										access agreement received			NS	NS	9-month (snapshot)
FO-8	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS	NS	NS	9-month (snapshot)
FO-17	NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS			NS		NS	NS	NS		NS	NS	NS		NS		NS	NS			NS	NS			9-month (snapshot)
FO-22		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
FO-J1												NS						NS	NS																				NS	NS	NA	NS	NS	NA	NS	NS	9-month (snapshot)
HS-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS											NS	NS	NS				NS	NS			NS	NS			9-month (snapshot)
HS-2	NS																																				NS		NS	NS			NS	NS			9-month (snapshot)
HS-3	NS		NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS			9-month (snapshot)
I10-2																				NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NA	NS		NS	NS		NS	NS			9-month (snapshot)
I10-4	NS								NS														NA	NA	NA	NA	NA	NA	NA																	Yes	Quarterly
I10-5	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
I10-7	NS	NS		NS	NS	NS			NS	NS	NS		NS																			NS	NA	NA	NS		NS	NS			NS	NS			9-month (snapshot)
I10-8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
JW-5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS					NS	NS	NS										NS	NS	NS		NS	NS	NS			NS	NS			9-month (snapshot)
JW-6		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS			9-month (snapshot)
JW-7		NS	NS	NS	NS	NS	NS	NS																																NS	NS		NS	NS			9-month (snapshot)
JW-8	NS	NS	NS	NS	NS	NS	NS																																	NS	NS		NS	NS			9-month (snapshot)
JW-9																NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS			9-month (snapshot)
JW-13		NS	NS	NS	NS		NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS	NS	NS		NS	NS	NS		NS	NS			9-month (snapshot)
JW-14																			Tol																						NS	NS		NS	NS		NS	NS	9-month (snapshot)
JW-15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS					NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
JW-26	NS	NS		NS											NS	NS	NS		NS	NS	NS		NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA		NS	NS	NS		NS	NS		NS	NS	9-month (snapshot)
JW-27	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS									NS					NS	NS	NS		NS	NS	NS			NS	NS			9-month (snapshot)
JW-28	NS	NS	NS	NS	NS	NS	NS	NS																	NS	NS	NS													NS	NS		NS	NS			9-month (snapshot)
JW-29	NS	NS	NS	NS	NS	NS	NS																																	NS	NS		NS	NS			9-month (snapshot)
JW-30	NS	NS	NS	NS	NS	NS																																		NS	NS		NS	NS			9-month (snapshot)
JW-31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				NS	NS		NS	NS		NS	NS	9-month (snapshot)
LS-1													NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS													NS	NS		NS	NS		NS	NS	9-month (snapshot)
LS-4																							NS	NS	NS	NS														NS	NS		NS	NS		NS	NS	9-month (snapshot)
LS-5																																															Yes	Quarterly
LS-5-A2																																							GAC installed 10/6/11		NS		NS		NS		NS	Biannually (Mar & Sept)
LS-6																																														Yes	Quarterly
LS-6-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Biannually (Mar & Sept)
LS-7																																														Yes	Quarterly
LS-7-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Biannually (Mar & Sept)
OFR-1	NS																																						NS	NS		NS	NS		NS	NS	9-month (snapshot)
OFR-3																																					NA	NS									Yes	Quarterly
OFR-3-A2	NS	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	NS	NS		NS		NS		NS		NS	Biannually (Mar & Sept)
OFR-4	NS	NS	NS	NS	NS	NS	NS			NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS		NS	NS		NS	NS	9-month (snapshot)
OW-HH1																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
OW-HH2																															access agreement received														Yes	Quarterly
OW-CE1																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
OW-CE2																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
OW-MT2																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
OW-BARNOWL																															access agreement received														Yes	Quarterly
OW-DAIRYBARN																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
OW-HH3																															access agreement received										NS	NS		NS	NS	9-month (snapshot)
RFR-3	NS	NS	NS	NS	NS	NS	NS	NS	NS						NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
RFR-4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS	Tol	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
RFR-5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
RFR-8		NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS			NS	NS			9-month (snapshot)
RFR-9			NS		NS	NS	NS			NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS							NS	NS			NS	NS			NS	NS			9-month (snapshot)
RFR-10																																														Yes	Quarterly
RFR-10-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Biannually (Mar & Sept)
RFR-10-B2				NS	NS	NS	NS	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Biannually (Mar & Sept)
RFR-11																																														Yes	Quarterly
RFR-11-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Biannually (Mar & Sept)
RFR-12																				NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NA	NS		NS		NS	NS	NS	NS	9-month (snapshot)
RFR-13											Well Installed										NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS			NS	NS		NS	NS	NS	NS	NS	9-month (snapshot)
RFR-14															Well Installed																									NS	NS		NS	NS		NS	NS	9-month (snapshot)
SLD-01																															permission to sample granted, no access agreement										NS	NS	NA	NS	NS	9-month (snapshot)
SLD-02																															permission to sample granted, no access agreement									NA	NS		NS	NS	NA	NS	NS	9-month (snapshot)

Wells Sampled: 9
Post GAC samples: 0
Total Samples: 9

VOCs detected are greater than 90% of the MCL. Sample monthly; quarterly after GAC installation.

VOCs detected are greater than 80% of the MCL. The well will be placed on a monthly sampling schedule until GAC installation then quarterly sampling after GAC installation.

VOCs detected are less than 80% of the MCL (<4.0 ppb and >0.06 ppb for PCE & <4.0 ppb >0.05 ppb for TCE). After four quarters of stable results the well can be removed from quarterly sampling.

This well has a GAC filtration unit installed by CSSA. Post GAC samples are collected every six months.
A1 - after GAC canister #1
A2 - after GAC canister #2

Yes — To be sampled in June 2013.

NS — Not sampled for that event.

No VOCs detected. Sample on an as needed basis.

NA — Not applicable, sample could not be collected due to pump outage or well access conflict.

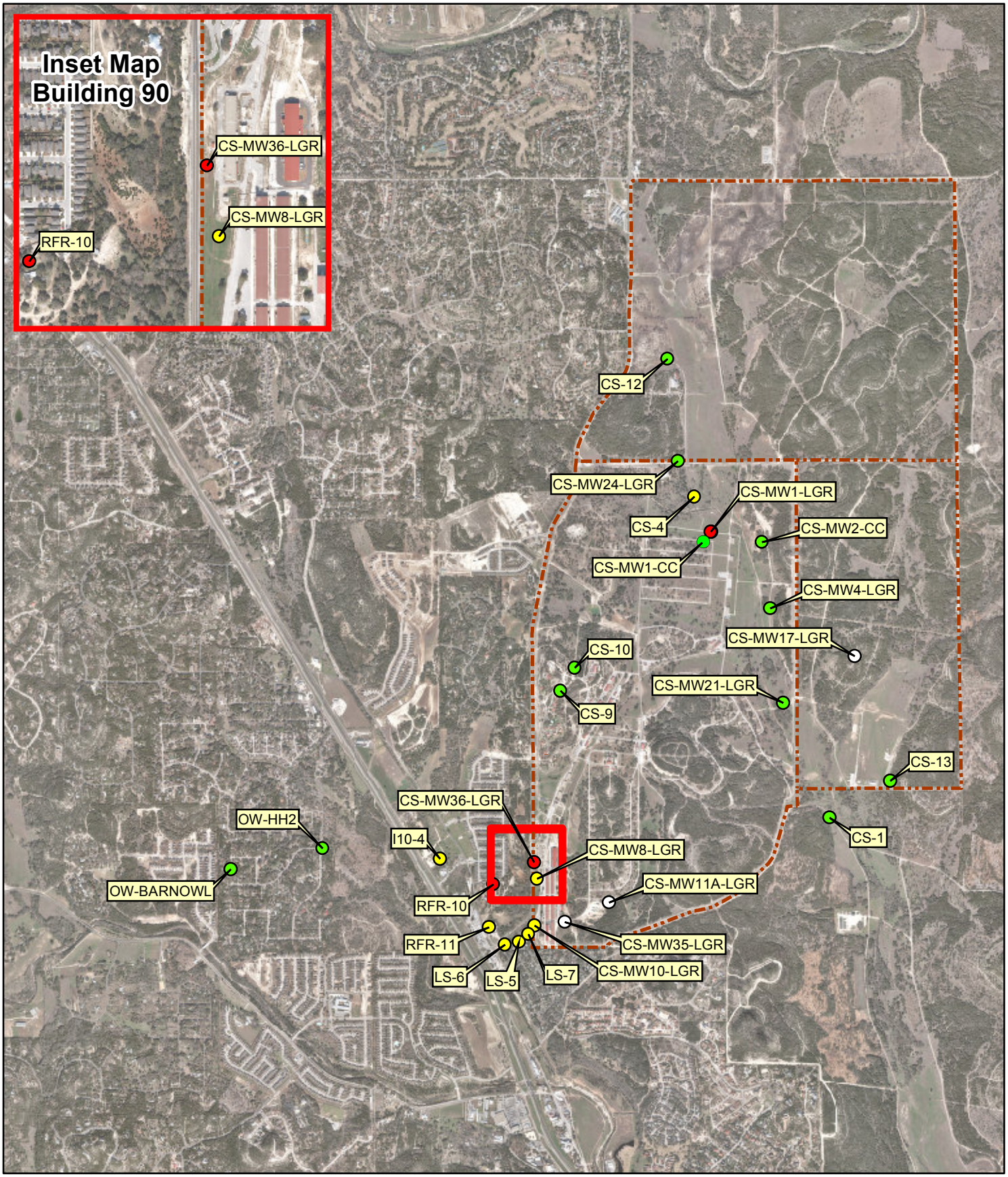

Figure 2.1

On-Post and Off-Post Well Sampling Locations for June 2013
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\June13_Sampled_Wells.mxd - 9/12/2013 @ 6:55:42 PM

Table 2.2 June 2013 Off-Post Groundwater Results, Detected Analytes Only

Subdivision	Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Comments
IH-10	I10-4	6/26/2013	--	--	--	**3.88**	**1.6**	--	PCE last above the MCL in 6/2012.
Leon Springs Villas	LS-5	6/19/2013	--	--	--	**0.84F**	**2.34**	--	TCE above the RL for 21st consecutive quarter.
	LS-5-A2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
	LS-6	6/19/2013	--	--	--	**0.68F**	**2.97**	--	PCE last above the MCL in 12/2002.
	LS-6-A2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
	LS-7	6/19/2013	--	--	--	**1.68**	**0.24F**	--	PCE above the MCL once (12/2002) since well sampling began in 1999.
	LS-7-A2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
Ralph Fair Road	RFR-10	6/19/2013	--	**0.28F**	--	**12.82**	**8.73**	--	PCE & TCE first reported above the MCL in 1999.
	RFR-10-A2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
	RFR-10-B2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
	RFR-11	6/19/2013	--	--	--	**0.64F**	**2.32**	--	TCE above the RL for the 12th consecutive quarter.
	RFR-11-A2	6/19/2013	--	--	--	--	--	--	Post-GAC sample
The Oaks Water Supply	OW-BARNOWL	6/26/2013	--	--	--	--	--	--	Both wells non-detect for the 9th consecutive quarter.
	OW-HH2	6/26/2013	--	--	--	--	--	--	
Laboratory Detection Limits & Maximum Contaminant Level									
	Method Detection Limit (MDL)		**0.12**	**0.07**	**0.08**	**0.06**	**0.05**	**0.08**	
	Reporting Limit (RL)		**1.2**	**1.2**	**0.6**	**1.4**	**1**	**1.1**	
	Max. Contaminant Level (MCL)		**7**	**70**	**100**	**5**	**5**	**2**	

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L.

Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene

Data Qualifiers:

--The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

In January 2013, routine semi-annual maintenance was performed on the GAC treatment systems at LS-5, LS-6, LS-7, OFR-3, RFR-10, and RFR-11. Carbon canisters were exchanged and other routine maintenance was performed. GAC filtered samples were not collected as part of the groundwater task but were collected under the AOC-65 ISCO task during June 2013. These samples will be collected again in during the September 2013 event.

Based on historical detections, the lateral extent of VOC detections extends beyond the south and west boundaries of CSSA. Past detections of VOCs have extended 0.37 miles south to well LS-4 and 1.5 miles west to OW-BARNOWL **(Figure 2.1).**

3.0 SUMMARY AND RECOMMENDATIONS

Results of the June 2013 sampling are summarized as follows:

- Nine wells were scheduled for sampling in June 2013. One well was not sampled (OFR-3) due to the inability to contact the new property owner.
- Well RFR-10 exceeded the MCL in June 2013 for PCE and TCE. This well is equipped with a GAC filtration system.
- PCE and/or TCE were detected above the RLs in public and/or private drinking water wells I10-4, LS-5, LS-6, LS-7, and RFR-11. Wells LS-5, LS-6, LS-7, and RFR-11 have GAC treatment systems in place and well I10-4 is unused.
- 1,1-DCE, *trans*-1,2-DCE, and vinyl chloride were not detected in any of the off-post wells in June 2013.
- GAC-filtered samples were not collected as part of the quarterly groundwater monitoring but were collected in conjunction with the AOC-65 ISCO study. All GAC-filtered samples were non-detect indicating the GAC units are functioning properly. GAC-filtered sample data and other analytes collected as part of the ISCO study from June 2013 can be found in the *AOC-65 In-Situ Chemical Oxidation Assessment Report* that will be drafted later this year when sampling is completed. The next GAC-filtered samples will be collected in September 2013.
- Semi-annual GAC maintenance, including carbon change-out, was performed July 29th, 2013; the next semi-annual GAC maintenance will be due in January 2014.
- Attempts were made to contact the new owner of OFR-3 by telephone in June 2013. On August 2, 2013 a letter, access agreement, and the most recent fact sheet were mailed to the new OFR-3 well owner.
- In accordance with project DQOs, the rationale for the selection of 63 samples to be collected in September 2013 is provided in **Table 3.1**.

Table 3.1
Sampling Rationale for September 2013

Well ID	2001		2002				2003				2004				2005				2006				2007				2008				2009				2010				2011				2012				2013			Sampling Frequency
	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept	Dec	Mar	June	Sept		
BSR-03																																						access agreement received				NS	NS		NS	NS	Yes	9-month (snapshot)
BSR-04																																							access agreement received				NS	NS	Yes	9-month (snapshot)
FO-8	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
FO-17	NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS		NS	NS	NS		NS	NS	NS		NS		NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
FO-22		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
FO-J1												NS						NS	NS																				NS	NS	NA	NS	NS	NA	NS	NS	Yes	9-month (snapshot)
HS-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS											NS	NS	NS				NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
HS-2	NS																																						NS				NS	NS		NS	NS	Yes	9-month (snapshot)
HS-3	NS		NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS		NS	NS	NS		NS	NS	NS		NS		NS	NS	NS		NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
I10-2																				NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NA	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
I10-4	NS								NS														NA	NA	NA	NA	NA	NA	NA																		Yes	Quarterly
I10-5	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
I10-7	NS	NS		NS	NS	NS			NS	NS	NS		NS																					NS	NA	NA	NS		NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
I10-8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS			NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
JW-5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS					NS	NS	NS										NS	NS	NS		NS	NS	NS				NS	NS		NS	NS	Yes	9-month (snapshot)
JW-6		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
JW-7		NS	NS	NS	NS	NS	NS	NS																																			NS	NS		NS	NS	Yes	9-month (snapshot)
JW-8	NS	NS	NS	NS	NS	NS	NS																																				NS	NS		NS	NS	Yes	9-month (snapshot)
JW-9															NS	NS	NS			NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
JW-13		NS	NS	NS	NS		NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
JW-14																			Tol																												Yes	9-month (snapshot)
JW-15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS					NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
JW-26	NS	NS		NS											NS	NS	NS		NS	NS	NS		NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
JW-27	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS									NS						NS	NS	NS		NS	NS	NS				NS	NS		NS	NS	Yes	9-month (snapshot)
JW-28	NS	NS	NS	NS	NS	NS	NS	NS																	NS	NS	NS	NS															NS	NS		NS	NS	Yes	9-month (snapshot)
JW-29	NS	NS	NS	NS	NS	NS	NS																																				NS	NS		NS	NS	Yes	9-month (snapshot)
JW-30	NS	NS	NS	NS	NS	NS																																					NS	NS		NS	NS	Yes	9-month (snapshot)
JW-31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
LS-1													NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS															NS	NS		NS	NS	Yes	9-month (snapshot)
LS-4																								NS	NS	NS																NS	NS		NS	NS	Yes	9-month (snapshot)
LS-5																																															Yes	Quarterly
LS-5-A2																																					GAC installed 10/6/11			NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
LS-6																																															Yes	Quarterly
LS-6-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
LS-7																																															Yes	Quarterly
LS-7-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
OFR-1	NS																																						NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
OFR-3																																															Yes	Quarterly
OFR-3-A2	NS	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	NS	NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
OFR-4	NS	NS	NS	NS	NS	NS	NS			NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
OW-HH1																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
OW-HH2																															access agreement received															Yes	Quarterly
OW-CE1																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
OW-CE2																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
OW-MT2																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
OW-BARNOWL																															access agreement received															Yes	Quarterly
OW-DAIRYBARN																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
OW-HH3																															access agreement received										NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-3	NS	NS	NS	NS	NS	NS	NS	NS	NS						NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS	Tol	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-8		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-9			NS		NS	NS	NS			NS	NS	NS			NS	NS	NS			NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS			NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-10																																															Yes	Quarterly
RFR-10-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
RFR-10-B2				NS	NS	NS	NS	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
RFR-11																																															Yes	Quarterly
RFR-11-A2				NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	Yes	Biannually (Mar & Sept)
RFR-12																				NS	NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NA	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-13											Well Installed										NS	NS		NS	NS	NS		NS	NS	NS		NS	NS	NS				NS	NS			NS	NS		NS	NS	Yes	9-month (snapshot)
RFR-14															Well Installed																												NS	NS		NS	NS	Yes	9-month (snapshot)
SLD-01																															permission to sample granted, no access agreement																		Yes	9-month (snapshot)
SLD-02																															permission to sample granted, no access agreement				NA	NS			NS	NS	NA	NS	NS	Yes	9-month (snapshot)

Wells Sampled: 56
Post GAC samples: 7
Total Samples: 63

VOCs detected are greater than 90% of the MCL. Sample monthly; quarterly after GAC installation.

VOCs detected are greater than 80% of the MCL. The well will be placed on a monthly sampling schedule until GAC installation then quarterly sampling after GAC installation.

VOCs detected are less than 80% of the MCL (<4.0 ppb and >0.06 ppb for PCE & <4.0 ppb >0.05 ppb for TCE). After four quarters of stable results the well can be removed from quarterly sampling.

This well has a GAC filtration unit installed by CSSA. Post GAC samples are collected every six months.
A1 - after GAC canister #1
A2 - after GAC canister #2

Yes — To be sampled in June 2013.

NS — Not sampled for that event.

No VOCs detected. Sample on an as needed basis.

NA — Not applicable, sample could not be collected due to pump outage or well access conflict.

APPENDIX A
EVALUATION OF DATA QUALITY OBJECTIVES ATTAINMENT

Appendix A Evaluation of Data Quality Objectives Attainment

Activity	Objectives	Action	Objective Attained?	Recommendations
Field Sampling	Conduct field sampling in accordance with procedures defined in the project work plan, SAP, QAPP, and HSP.	All sampling was conducted in accordance with the procedures described in the project plans.	Yes	NA
Contamination Characterization (Groundwater Contamination)	Determine the potential extent of off-post contamination (§2.3.1 of the DQOs for the Groundwater Contamination Investigation, revised November 2010).	Samples for laboratory analysis were collected from selected off-post public and private wells, which are located within a 2.5 mile radius of CSSA.	Partially	Replace wells where no VOCs were detected with wells that may be identified in the future, located to the west and southwest of AOC-65 to provide better definition of plume 2. Continue sampling of wells to the west of plume 1 (Fair Oaks and Jackson Woods) to confirm any detections possibly related to plume 1.
	Meet CSSA QAPP quality assurance requirements.	Samples were analyzed in accordance with the CSSA QAPP, and approved variances. A chemist verified all data.	Yes	NA
		All data flagged with a "U" and "J" are usable for characterizing contamination.	Yes	NA

Activity	Objectives	Action	Objective Attained?	Recommendations
	Evaluate CSSA monitoring program and expand as necessary (§2.3.1 of the DQOs for the Groundwater Contamination Investigation, revised November 2010). Determine locations of future monitoring locations.	Evaluation of data collected is ongoing and is reported in this quarterly groundwater report and will be reported in future quarterly groundwater reports. Additional information covering the CSSA monitoring program is available in Volume 5, CSSA Environmental Encyclopedia.	Yes	Continue data evaluation and quarterly teleconferences for evaluation of the monitoring program. Each teleconference/planning session covers expansion of the quarterly monitoring program, if necessary.
Project schedule/ Reporting	The quarterly monitoring project schedule shall provide a schedule for sampling, analysis, validation, verification, reviews, and reports for monitoring events off-post.	A schedule for sampling, analysis, validation, verification and data review, and reports is provided in this quarterly groundwater report and will be reported in future quarterly groundwater reports. Additional information covering the CSSA monitoring program is available in Volume 5, CSSA Environmental Encyclopedia.	Yes	Continue quarterly reporting to include a schedule for sampling, analysis, validation, and verification and data review and data reports.

Activity	Objectives	Action	Objective Attained?	Recommendations
Remediation	Evaluate the effectiveness of GACs (§3.2.3) and install as needed (§3.2.5 both of the DQOs for the Groundwater Contamination Investigation, revised November 2010).	Perform maintenance as needed. Install new GACs as needed.	Yes	Maintenance to the off-post GAC systems to be continued by Parsons' personnel every 3 weeks. Twice yearly (or as needed) maintenance to the off-post GAC systems by additional subcontractors to continue. Evaluations of future sampling results for installation of new GAC systems will occur as needed.

APPENDIX B
JUNE 2013 QUARTERLY OFF-POST GROUNDWATER ANALYTICAL RESULTS

Appendix B
June 2013 Quarterly Off-post Groundwater Analytical Results

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
I10-4	6/26/2013	0.12U	0.07U	0.08U	**3.88**	**1.6**	0.08U
LS-5	6/19/2013	0.12U	0.07U	0.08U	**0.84F**	**2.34**	0.08U
LS-5-A2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
LS-6	6/19/2013	0.12U	0.07U	0.08U	**0.68F**	**2.97**	0.08U
LS-6-A2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
LS-7	6/19/2013	0.12U	0.07U	0.08U	**1.68**	**0.24F**	0.08U
LS-7-A2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-10	6/19/2013	0.12U	**0.28F**	0.08U	**12.82**	**8.73**	0.08U
RFR-10-A2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-10-B2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-11	6/19/2013	0.12U	0.07U	0.08U	**0.64F**	**2.32**	0.08U
RFR-11-A2	6/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-BARNOWL	6/26/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-HH2	6/26/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L.
Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene

Data Qualifiers
U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

APPENDIX C
DATA VALIDATION REPORTS

(Laboratory data packages are submitted to CSSA electronically.)

SDG 71044
SDG 71046
SDG 71075

DATA VERIFICATION SUMMARY REPORT

for off-post and on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) sample collected from off-post and on-post Camp Stanley Storage Activity (CSSA) on June 19, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs). In addition, all on-post samples were analyzed for metals including cadmium, chromium, lead, and mercury.

71044

The field QC samples associated with this SDG were a set of parent/field duplicate (FD) a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 1.5ºC, which was slightly below the 2-6ºC range recommended by the CSSA QAPP. All water samples were arrived lab with no sign of freeze; therefore, there was minimal impact to the data.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of nine (9) samples, including five (5) off-post groundwater samples, three (3) on-site groundwater samples and one TB. All samples were collected on June 19, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in two (2) batches (#178728 and #178787) under one set of initial calibration (ICAL) with the same instrument. All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two laboratory control spike (LCS) samples and the surrogate spikes.

Both LCSs and surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- The two LCS samples were prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.

- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were two method blanks and one TB associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of three (3) on-post groundwater samples which were collected on June 19, 2013 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #179072. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and

- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of three (3) on-post groundwater samples collected on June 19, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #178915. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for off-post and on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) sample collected from off-post and on-post Camp Stanley Storage Activity (CSSA) on June 25, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs). In addition, all on-post samples were analyzed for metals including cadmium, chromium, lead, and mercury, drinking water well samples were also analyzed for arsenic, barium, copper, and zinc.

71075

The field QC samples associated with this SDG were two sets of parent/field duplicate (FD), a set of matrix spike/matrix spike duplicate (MS/MSD), and a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.0ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of thirteen (13) samples, including three (3) off-post groundwater samples, nine (9) on-site groundwater samples and one TB. All samples were collected on June 25, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in two (2) batches (#179027 and #179048) under two sets of initial calibration (ICAL) with the same instrument. All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two laboratory control spike (LCS) samples, MS/MSD, and the surrogate spikes. Sample CS-1 was designated as the parent sample for MS/MSD analyses.

Both LCSs and surrogate spike recoveries were within acceptance criteria.

All %R of the MS and MSD were compliant.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the parent/FD samples and MS/MSD. CS-1 was designated as the parent sample for MS and MSD analyses.

Sample CS-MW35-LGR and CS-12 were collected in duplicate. Since none of the target compounds had concentration greater than the reporting limits (RLs), the %RPD calculations were not applicable.

All %RPDs of the MS/MSD were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met for both sets of curves.
- The two LCS samples were prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were two method blanks and one TB associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of nine (9) on-post groundwater samples which were collected on June 25, 2013 and were analyzed for cadmium, chromium, and lead. All drinking water well samples were also analyzed for arsenic, barium, copper, and zinc.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #179461. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the two sets of parent/FD samples and MS/MSD.

None of the target metals were detected in the parent/FD set of sample CS-MW35-LGR.

CS-12

Metals	Parent, mg/L	FD, mg/L	%RPD	Criteria, %RPD
Barium	0.0304	0.0308	0.65	≤20
Zinc	0.125	0.104	18	

All %RPDs of MS/MSD were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the

minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of nine (9) on-post groundwater samples collected on June 25, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #179480. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the two sets of parent/FD samples and MS/MSD.

Mercury was not detected above the RL in both sets of parent/FD samples.

The %RPD of the MS/MSD was 16.5% which exceeded the 15% limit. "M" flag was applied to the parent sample result, CS-1.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for off-post and on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples collected from off-post and on-post Camp Stanley Storage Activity (CSSA) on June 19, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and other ISCO related parameters. This data validation report only covers the VOC results.

71046

There were no field quality control samples involved in this SDG. Trip blank was not included. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in two coolers. The coolers were received by the laboratory at a temperature of 1.0ºC and 1.5 ºC, which were below the 2-6ºC range recommended by the CSSA QAPP. None of the water samples was received frozen, the low cooler temperature should have no impact to the data quality.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of eight (8) samples, including six (6) off-post groundwater samples and two (2) on-site groundwater samples. All samples were collected on June 19, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in batch #178728 under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analysis.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met for both sets of curves.
- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.

- All internal standard criteria were met.

There was one method blank in this SDG. The blank was non-detect for all target VOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.